Arya Revenge

Arya is a programmer of an important software house, has been fired because she didn't solve an important problem that was assigned to her. She is very furious and want to take revenge on her boss, breaking the communication between his computer and the central server.

The computer of her boss and the central server are in the same network, which is composed of many machines (computers) and wires linking pairs of those machines. There is at most one wire between any pair of machines and there can be pairs of machines without a wire between them.

To accomplish her objective, she can destroy machines and wires, but she can't destroy neither the computer of her boss nor the central server, because those machines are monitored by security cameras. She has estimated the cost blowing up each machine and the cost of cutting each wire in the network.

She wants to determine the minimum cost of interrupting the communication between her boss' computer and the central server. Two computers A and B can communicate if there is a sequence of undestroyed machines $x_1,\ldots,x_n$ such that $x_1 = A$, $x_n = B$ and x_i is linked with x_{i+1} with an uncut wire (for each $1 \le i \le n-1$).

Input

The input consists of several test cases. Each test case is represented as follows:

- A line with two integers M and W ($2 \le M \le 50$, $0 \le W \le 1000$), representing (respectively) the number of machines and the number of wire in the network.
- $M-2$ lines, one per machine (different from the boss' machine and the central server), containing the following information separated by spaces:
    - An integer i ($2 \le i \le M-1$) with the identifier of the machine. Assume that the boss' machine has id 1 and that the central server has id M.
    - An integer c ($0 \le c \le 100000$) specifying the cost of destroying the machine.
- W lines, one per wire, containing the following information separated by spaces:
    - Two integers j and k ($1 \le j \le k \le M$) specifying the identifiers of the machines linked the wire. Remember that the wire is bidirectional.
    - An integer d ($0 \le d \le 100000$) specifying the cost of cutting the wire.

The end of the input is specified by a line with the string "0 0".
Suppose that the machines have distinct identifiers.

Output

For each test case, print a line with the minimum cost of interrupting the communication between the computer of your boss and the central server.

Sample Input

```
4 4
3 5
2 2
1 2 3
1 3 3
2 4 1
3 4 3
4 4
3 2
2 2
1 2 3
1 3 3
2 4 1
3 4 3
0 0
```

Sample Output

```
4
3
```